

# ***FSA Integration Partner***

**United States Department of Education**

**Federal Student Aid**



## **EAI Operations Services Performance Report II (Core Services)**

***Task Order #117***

**Deliverable # 117.1.1b**

**Version 1.0**

**April 30, 2003**



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# 1 Introduction

## 1.1 Summary

The purpose of this report is to document the EAI Core Operations services performed in support of Task Order 117, EAI Release 4.0 during the period of January 1, 2003 through April 25, 2003.

Task Order 117 provides for operational support and maintenance of the EAI architecture and infrastructure. Additionally, EAI Core services enable business application teams to implement application interfaces built upon the existing EAI architecture.

The efforts of the Core Operations services are summarized in the following sections:

- **Section 2: Major Accomplishments** - Provides an overview of the major accomplishments of the EAI Team over the course of the reporting period.
- **Section 3: EAI Architecture Overview** - Provides an up-to-date view of the EAI Architecture as it evolves over the duration of the task order.
- **Section 4: Infrastructure Change Requests, Upgrades, and Enhancements** – Provides a summary of the change requests, significant updates and enhancements to the EAI infrastructure.
- **Section 5: Environments** - Provides an overview of the environment infrastructure supporting the EAI Release 4.0 development and testing efforts.
- **Section 6: Test Summary** – Provides a summary of application EAI interface testing activities for the reporting period.
- **Section 7: EAI Communication** – Provides a summary of EAI external communication activities.
- **Appendix A: EAI Software Installation Report**- Documents the current status of all installed software for all EAI environments.
- **Appendix B: EAI Core Release 4.0 Organization Chart** - Documents the organizational structure and the resources assigned to the release for this reporting period.
- **Appendix C: EAI Core Release 4.0 Contact List** – Provides contact information for the EAI team.
- **Appendix D: EAI Environment Diagrams** - Documents the detailed EAI Development, Test, and Production environments.



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- **Appendix E:** *EAI Change Request Summary, January-April 2003* – Provides the summary and detailed information for all EAI submitted Change Requests for the reporting period.



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- **Appendix F:** *EAI Operations Support Schedule, January-April 2003* – The support instructions and schedules provided to the Virtual Data Center (VDC) for EAI Operations.
  - **Appendix G:** *COD 2.0 Development and Test Documentation*- Documents the technical design and testing documentation to implement the EAI related changes for COD 2.0.
  - **Appendix H:** *EAI Workshop*- the presentation delivered during the EAI Workshop.



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## 2 Major Accomplishments

The following list of accomplishments represents the major efforts and initiatives for this reporting period:

- Conducted an EAI Workshop on April 9, 2003. Gave presentations and answered questions about the EAI Architecture, WebSphere MQ, Application Messaging Interface (AMI), Data Integrator, working with the EAI Team, and EAI Operations Support.
- Supported testing and deployment of EAI for eZ-Audit. Deployed and configured EAI software and interfaces. Completed environment shakeout and connectivity testing. Provided on-call support to the eZ-Audit test team for all EAI related issues.
- Supported COD R2.0 SIT, UAT, IST, and School testing. Deployed EAI Code and configured all four environments. Completed environment shakeout and connectivity testing in all three environments. Provided 24/7 on-call support to the COD test teams for all EAI related issues.
- Supported the COD R2.0 implementation in Production. Deployed EAI Code while the COD system was down for implementation. Stopped and started the COD interfaces throughout the implementation weekend as required by COD for processing and validation before final “go” decision.
- Implemented four MQSI message flows for a FMS – GAPS Transaction ID work-around for the week between the COD R2.0 deployment and the FMS – GAPS deployment. This work-around stripped the Transaction ID from messages sent from COD to FMS, and padded the Transaction ID in messages sent from FMS to COD.
- Implemented proactive monitoring of FAFSA during the peak period. Monitored MQSeries objects for alerts and EAI log files for response times and errors. Worked with the VDC to monitor memory usage and CPU utilization on CPS.
- Completed MQ Configuration and testing of the additional servers added to the FAFSA production environment for FAFSA Peak. Removed seven FAFSA Peak servers from the Production MQSeries cluster as part of the post peak downsizing.
- Assisted the VDC with installation and configuration of QPasa! in the development and production environments. The EAI team provided installation advice and configuration instructions to VDC system administrators performing the installation.



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- Provided 24 hours-a-day operations support for EAI Architecture. Performed issue tracking and resolution and responded to daily adhoc support requests. Detailed production operations information is contained in the *EAI Production Architecture Performance Report* deliverable.
  - EAI Capacity Planning. Provided input to and presented section for EAI Capacity Planning meeting on March 5<sup>th</sup>.
  - Environment installation, configuration and validation to support FAFSA 7.0, COD 2.0 and QPasa! implementation efforts.
  - EAI Evergreening - MQSI 2.0.2 upgrade cancelled as MQSI is planned for removal from EAI architecture and will be replaced by a Java based transformation engine. Detailed information is contained in the *117.1.3 EAI Evergreening Schedule and Approach* deliverable.
  - Formalized EAI Operations support procedures and schedule with VDC. Refer to **Appendix F** – *EAI Operations Support Schedule January - April 2003* for detailed information.



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### **3 EAI Architecture Overview**

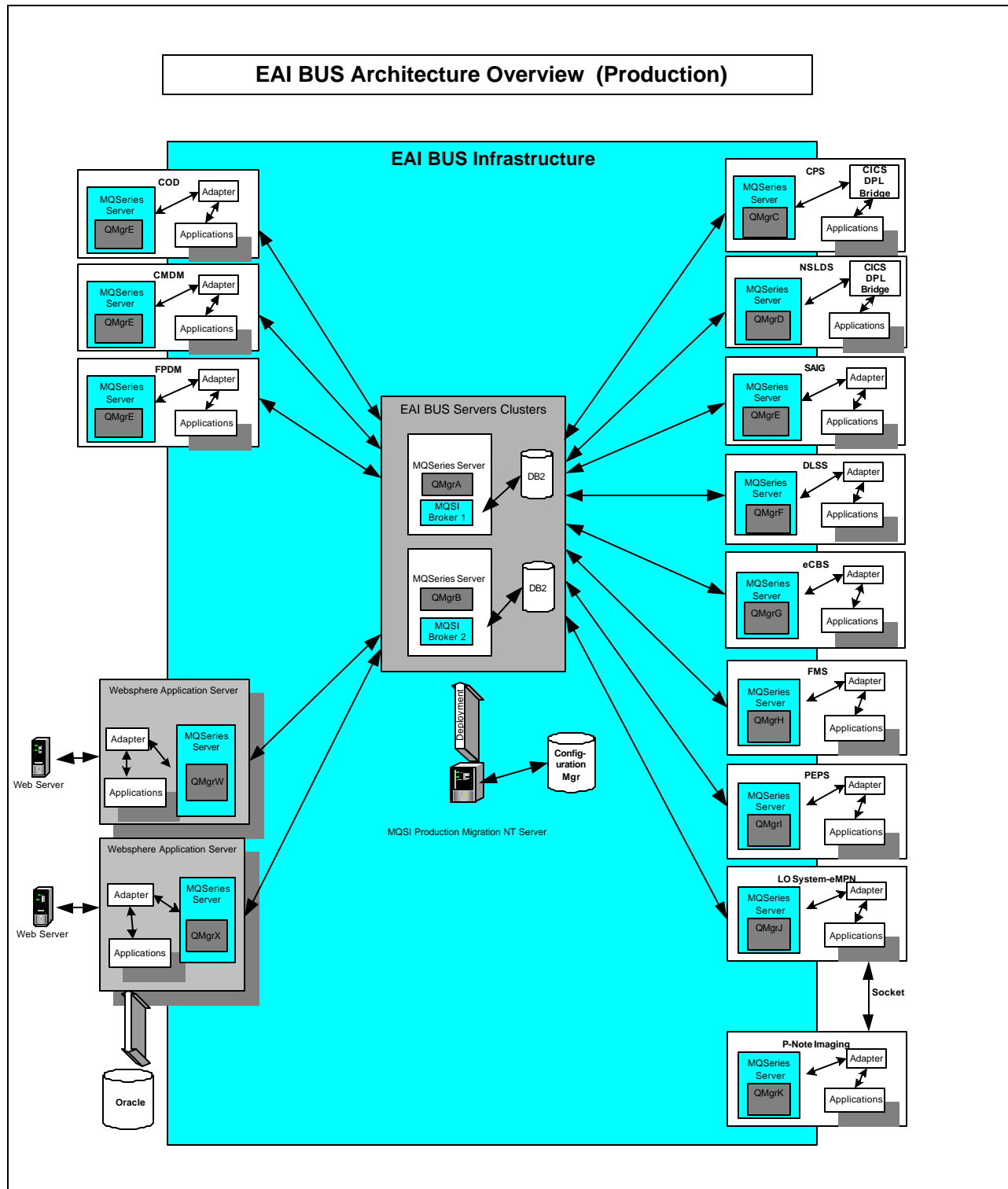
The EAI Architecture is comprised of legacy systems, interfaces to the legacy systems, interfaces to modernization systems, and interfaces to FSA's Integrated Technical Architecture (ITA).

The FSA Enterprise Application Integration Core Architecture includes the following five component areas:

- Legacy Systems – Mainframe and Mid-Tier
- Modernization Systems
- Internet – Websphere Application Server
- EAI Bus Servers
- EAI Development Workstations

The following diagram is a high level view of the EAI Architecture.







## 4 Infrastructure Change Requests, Upgrades, and Enhancements

One of the key objectives of EAI Core Operations Services is to provide infrastructure maintenance. This section provides a summary of the EAI submitted change requests and the significant updates and enhancements to the EAI infrastructure, including the reason for these enhancements.

### 4.1 Change Requests

The Change Request management process provides the structure to implement fixes, upgrades, or enhancements to the EAI environments. Change Requests are submitted, tracked, and implemented using a Rational ClearQuest tool called ECM Change Request Tracking Tool. During the first quarter of FY2003, the EAI Team logged and assisted in the implementation of 47 Change Requests affecting the Development, Test, and Production environments. Before a Change Request is submitted to Production, the EAI Team thoroughly tests the change, which is subsequently packaged with instructions and/or other supporting documentation for implementation. Additionally, the EAI Team provides the VDC with implementation and post-implementation support and validation for the majority of the Change Requests.

Refer to **Appendix E** – *EAI Change Request Summary, January-April 2003* for a detailed summary of all change requests.

### 4.2 Upgrades

Upgrades of the EAI infrastructure are being performed to continue vendor support and to obtain enhancements provided by new releases. For the purposes of this report, an upgrade is defined as a maintenance patch, release, or other fix that has been applied to the existing infrastructure (i.e., new software, new hardware). Detailed software upgrade information is contained in the *117.1.3 EAI Evergreening Schedule and Approach* deliverable.

The following software upgrades were completed:

Software	Environment	Server(s)	Old Version	New Version	Reason
MQ Series v 5.2	Development	SU35E17	CSD05	CSD05 + efix#1-2	IBM recommended efixes to resolve semaphore issue in Production
MQ Series v 5.2	Production	SU35E3	CSD05	CSD05 +	IBM recommended



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				efix#1-2	efixes to resolve semaphore issue in Production
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## 4.3 Enhancements

The EAI team continually evaluates products that would improve the EAI infrastructure. For the purposes of this report, an enhancement is defined as new component that has been added to the existing infrastructure (i.e., new software, new hardware). No enhancements were performed during this period.

### 4.3.1 MQ Software QPasa!

QPasa! is an application that will help to standardize and improve MQSeries configuration management, deployment and monitoring capabilities. EAI is working with the VDC to install and implement QPasa!. The agent software is currently being installed in the EAI and CSC Development and Production environments. Refer to *Appendix A – EAI Software Installation Report* for a list of all servers and environments that QPasa! is installed. Once implemented, QPasa! will replace MQMon for monitoring MQSeries.



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## 5 Environments

This section provides detailed diagrams of the EAI environments, configurations, and interface connectivity to support all phases of the EAI System Design Life Cycle (SDLC). A critical component of Core Operations Services is the maintenance of all EAI environments in addition to Production.

- |                                 |                          |
|---------------------------------|--------------------------|
| ▪ Development                   | ▪ FAFSA EAI Development  |
| ▪ System Integration Test (SIT) | ▪ FAFSA Development      |
| ▪ Inter System Test (IST)       | ▪ FAFSA Test             |
| ▪ User Acceptance Test (UAT)    | ▪ FAFSA Performance Test |
| ▪ Staging                       | ▪ FAFSA Demo Production  |
| ▪ Production                    | ▪ FAFSA Production       |

Refer to **Appendix D – EAI Environment Diagrams** for detailed diagrams of the current configuration of the above listed environments.

### 5.1 Environment Updates

#### 5.1.1 Development

No updates.

#### 5.1.2 COD 2.0 IST/UAT

The EAI source code build was migrated to IST and UAT to support COD 2.0 testing. No other major environment updates were made.

#### 5.1.3 FAFSA 7.0

As part of the FAFSA 7.0 post peak ramp down, seven temporary servers were removed from the FAFSA Production architecture to accommodate the reduced demand. Refer to **Appendix D – EAI Environment Diagrams, FAFSA-Production tab** for a diagram of the current configuration.



### 5.1.3.1 Development and Test

Computing Environment	Server Manufacturer & Model	Queue Manager (Port)	Queue Manager Cluster	CPS Manager Cluster
EAI Dev	HPA2	FAFSAD2 (1420)	FAFSADC1	CPD1
FAFSA Development	HPA2	FAFSAD1 (1416)	FAFSADC1	CPD1
FAFSA Test	HPA2	FAFSAT1 (1417)	FAFSATC1	CPT1
FAFSA Performance	HPN3	FAFSAI1 (1414)	FAFSAIC1	CPA1
FAFSA Performance	HPN8	FAFSAI2 (1414)	FAFSAIC1	CPA1
Demo Development	SU35E5	FAFSAT1 (HPA2: 1417)	FAFSATC1	CPT1
Demo Production	SU35E9	FAFSAT1(HPA2: 1417)	FAFSATC1	CPT1

### 5.1.3.2 Production

Computing Environment	Server Manufacturer & Model	Queue Manager (Port)	Queue Manager Cluster	CPS Manager Cluster
Production	HPN4	FAFSAP5 (1414)	FAFSAPC1	CPP1
Production	HPN15	FAFSAP2 (1414)	FAFSAPC1	CPP1
Production	HPN16	FAFSAP3 (1414)	FAFSAPC1	CPP1
Production	HPN2	FAFSAP4 (1414)	FAFSAPC1	CPP1

Additional information for FAFSA 7.0 can be found in the following FAFSA 7.0 Production Readiness Review documentation:

- FAFSA\_7.0\_Operations Checklist v3\_12\_20\_02.doc
- FAFSA\_7.0\_TroubleShootingGuide\_12-19-02.doc
- FAFSA\_7.0 TechArchRequirements\_v1.1\_12-20-02.doc
- FAFSA 7.0 Performance Test\_ver1.6\_ 12-19-02.doc
- FAFSA\_7.0\_Install Guidelines (ITA) v1.2\_12-20-02.doc



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#### **5.1.4 Staging**

Currently CSC is building out the Staging environment, which is not available for use for EAI pre-Production staging.



## 6 Test Summary

This section provides a summary of application EAI interface testing activities during the reporting period.

Type	Effort	
Performance	SAIG	The SAIG hardware configuration was modified to support peak processing for the 2002-2003 school year. Performance testing was conducted to ensure the hardware configuration was adequate to support peak processing.
Integration	COD to/from FMS	MQSI message flows were modified to handle the addition of the GAPS Transaction ID in the messages.
Integration	COD to/from FMS	MQSI message flows were modified as a temporary work-around for COD R2.0 being implemented (with GAPS Transaction ID) before FMS (with GAPS Transaction ID) was implemented. For one week, these work-around message flows were used to strip the GAPS Transaction ID in messages going from COD to FMS, and to pad the GAPS Transaction ID in messages going from FMS to COD.
Integration	PEPS to eZ-Audit	This feed contains a full extract of all participant eligibility data contained in PEPS that is useful to eZ-Audit processing. PEPS sends a complete extract on a daily basis (M-F, excluding holidays).
Integration	SAIG to/from COD	SAIG receives Common Record or Legacy input files from schools. These files are transformed and sent to COD by EAI. COD returns a Common Record format acknowledgement for each record received; EAI transforms the acknowledgements and sends them back to SAIG for schools.





Refer to **Appendix G – COD 2.0 Development and Test Documentation**. The enclosed CD contains Interface Control Documents (ICD) s and Testing Documentation. The complete list of files on the CD is included below:

Interface Control Documents:

- COD-SAIG\_ICD\_Reports\_R20.doc
- EAI\_COD\_FMS\_TRAN\_ICD\_002t\_v10.doc
- EAI\_FMS\_COD\_TRAN\_ICD\_002a\_v9.doc
- EAI\_FMS\_COD\_TRAN\_ICD\_002t\_v10.doc
- EAI\_FMS\_RESP\_ICD\_002t\_v9.doc
- Peps to eZ-Audit ICD.doc
- SAIG\_COD\_ICD\_Transformation\_R2.0.doc

Test Documents:

- 02-03 AY Config Mapping Name Chg Unit Test Conditions v03.xls
- 02-03 AY Config Mapping Name Chg Unit Test Scripts v01.xls
- 24.05 Pell Legacy Batch Level Edits 0001 Unit Test Conditions.xls
- 24.05 Pell Legacy Batch Level Edits 0001 Unit Test Scripts.xls
- 24.05 Pell Legacy Batch Level Edits 0102 Unit Test Conditions.xls
- 24.05 Pell Legacy Batch Level Edits 0102 Unit Test Scripts.xls
- 24.05 Pell Legacy Batch Level Edits 0203 Unit Test Conditions.xls
- 24.05 Pell Legacy Batch Level Edits 0203 Unit Test Scripts.xls
- 24.05 Pell Legacy Batch Level Edits 0304 Unit Test Conditions.xls
- 24.05 Pell Legacy Batch Level Edits 0304 Unit Test Scripts.xls
- 24.05 Pell Legacy Batch Level Edits 9900 Unit Test Conditions.xls
- 24.05 Pell Legacy Batch Level Edits 9900 Unit Test Scripts.xls
- 24.06 Pell Legacy Specific Edits 0001 Unit Test Conditions v01.xls
- 24.06 Pell Legacy Specific Edits 0001 Unit Test Scripts v01.xls
- 24.06 Pell Legacy Specific Edits 0102 Unit Test Conditions v01.xls
- 24.06 Pell Legacy Specific Edits 0102 Unit Test Scripts v01.xls
- 24.06 Pell Legacy Specific Edits 0203 Unit Test Conditions v01.xls
- 24.06 Pell Legacy Specific Edits 0203 Unit Test Scripts v01.xls
- 24.06 Pell Legacy Specific Edits 0304 Unit Test Conditions v01.xls
- 24.06 Pell Legacy Specific Edits 0304 Unit Test Scripts v01.xls
- 24.07 Pell Legacy Disb Edits 0001 Unit Test Conditions v01.xls
- 24.07 Pell Legacy Disb Edits 0001 Unit Test Scripts v01.xls
- 24.07 Pell Legacy Disb Edits 0102 Unit Test Conditions v01.xls
- 24.07 Pell Legacy Disb Edits 0102 Unit Test Scripts v01.xls
- 24.07 Pell Legacy Disb Edits 0203 Unit Test Conditions v01.xls
- 24.07 Pell Legacy Disb Edits 0203 Unit Test Scripts v01.xls
- 24.07 Pell Legacy Disb Edits 0304 Unit Test Conditions v01.xls
- 24.07 Pell Legacy Disb Edits 0304 Unit Test Scripts v01.xls



- 24.07 Pell Legacy Disb Edits 99-00 Unit Test Conditions v01.xls
- 24.07 Pell Legacy Disb Edits 99-00 Unit Test Scripts v01.xls
- 26.06 Pell Legacy Origination 0001 Mapping Document v01.xls
- 26.06 Pell Legacy Origination 0001 Unit Test Conditions v01.xls
- 26.06 Pell Legacy Origination 0001 Unit Test Scripts v01.xls
- 26.06 Pell Legacy Origination 0102 Mapping Document v01.xls
- 26.06 Pell Legacy Origination 0102 Unit Test Conditions v01.xls
- 26.06 Pell Legacy Origination 0102 Unit Test Scripts v01.xls
- 26.06 Pell Legacy Origination 0203 Mapping Document v01.xls
- 26.06 Pell Legacy Origination 0203 Unit Test Conditions v01.xls
- 26.06 Pell Legacy Origination 0203 Unit Test Scripts v01.xls
- 26.06 Pell Legacy Origination 0304 Mapping Document v01.xls
- 26.06 Pell Legacy Origination 0304 Unit Test Conditions v01.xls
- 26.06 Pell Legacy Origination 0304 Unit Test Scripts v01.xls
- 26.06 Pell Legacy Origination 9900 Mapping Document v01.xls
- 26.06 Pell Legacy Origination 9900 Unit Test Conditions v01.xls
- 26.06 Pell Legacy Origination 9900 Unit Test Scripts v01.xls
- 26.07 Pell Legacy Disbursement 0001 Mapping Document v01.xls
- 26.07 Pell Legacy Disbursement 0001 Unit Test Conditions v01.xls
- 26.07 Pell Legacy Disbursement 0001 Unit Test Scripts v02.xls
- 26.07 Pell Legacy Disbursement 0001 Unit Test Scripts v03.xls
- 26.07 Pell Legacy Disbursement 0102 Mapping Document v01.xls
- 26.07 Pell Legacy Disbursement 0102 Unit Test Conditions v01.xls
- 26.07 Pell Legacy Disbursement 0102 Unit Test Scripts v03.xls
- 26.07 Pell Legacy Disbursement 0203 Mapping Document v01.xls
- 26.07 Pell Legacy Disbursement 0203 Unit Test Conditions v03.xls
- 26.07 Pell Legacy Disbursement 0203 Unit Test Scripts v02.xls
- 26.07 Pell Legacy Disbursement 0304 Mapping Document v01.xls
- 26.07 Pell Legacy Disbursement 0304 Unit Test Conditions v03.xls
- 26.07 Pell Legacy Disbursement 0304 Unit Test Scripts v02.xls
- 26.07 Pell Legacy Disbursement 9900 Mapping Document v01.xls
- 26.07 Pell Legacy Disbursement 9900 Unit Test Conditions v01.xls
- 26.07 Pell Legacy Disbursement 9900 Unit Test Scripts v03.xls
- COD R 2.0 Regression Testing test conditions.xls
- COD R 2.0 Regression Testing test Scripts.xls
- COD to FMS Fin Nonfin Test Condition v01.xls
- COD to FMS Fin Response Test Condition v01.xls
- FMS Adapter Test Condition v01.xls
- FMS to COD Fin NonFin Test Condition v01.xls
- FMS to COD Fin Response Test Condition v01.xls
- LOWEB Test Condition v01.xls
- PEPS-eZAudit Test Condition v01.xls



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## 7 EAI Communication

To facilitate communication of EAI accomplishments, capabilities and services, the EAI Core Team conducted a workshop focusing on both business and technical aspects of EAI. The workshop was held on April 9, 2003.

Refer to **Appendix H** – *EAI Workshop* for a copy of the presentation delivered.